Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) In a telecommunication system, a method for co-channel interference identification and mitigation comprising:

estimating the number co-channel interference signals and time spans of ~~co-channel interference channels~~ channel responses associated with the co-channel interference signals, based on maximum likelihood estimation and minimum description length from training information derived from a single time division multiple access packet; and

applying said estimating to mitigation of co-channel interference at a receiver.

2. (currently amended) A method for extracting information from a desired signal using a received signal in the presence of at least one co-channel interference signal and intersymbol interference while simultaneously demodulating both the desired signal and the ~~co-channel interference signals~~ at least one co-channel interference signal, said method comprising:

capturing said received signal as channel observations;

determining a channel model and an initial estimate of corresponding model parameters for said channel model using said channel ~~observation~~ observations during a training portion, said channel model including an estimate of the number of co-channel interference signals present; and

performing a joint sequence detection calculation on said channel ~~observation~~ observations during a data portion using said channel model and at least one current estimate of said model parameters thereby to produce an estimate of data representing said desired signal during said data portion.

3. (currently amended) The method according to claim 2 wherein said channel model and initial estimate determining step comprises:

testing a pre-selected set of ~~said~~ channel models to determine a best model and corresponding model parameter estimates for said best model.

4. (currently amended) The method according to claim 3 wherein said channel model further includes ~~an estimate of the number of co-channel interference signals present,~~ an estimate of a time span of intersymbol interference channel response for the desired signal and each co-channel interference signal, and a specific combination of training sequences in the training portion for the desired signal and the co-channel interference signals.

5. (currently amended) The method according to claim 3 wherein said best model is determined based on a minimum description length criterion associated with a joint least squares estimate of intersymbol interference channels of said pre-selected set of said channel models based on said channel ~~observation~~ observations during said training portion.

6. (original) The method according to claim 5 wherein said joint least squares estimate is obtained by updating a least squares solution of a first impulse response to apply to a longer impulse response.

7. (original) The method according to claim 2 wherein said joint sequence detection is rendered adaptive by repeatedly updating said at least one estimate of said model parameters.

8. (original) The method according to claim 7 wherein said model parameters comprise coefficients of the intersymbol interference channel response for the desired signal and each co-channel interference signal.

9. (original) The method according to claim 7 wherein said adaptive joint sequence detection is performed using per-survivor processing adaptive sequence detection.

10. (original) The method according to claim 7 wherein said adaptive joint sequence detection is performed using single delayed decision feedback estimation adaptive sequence detection.

11. (original) The method according to claim 10 wherein said adaptive sequence detection further includes reduced state techniques in order to reduce complexity.

12. (original) The method according to claim 9 wherein said adaptive sequence detection further includes reduced state techniques in order to reduce complexity.

13. (original) The method according to claim 8 wherein said adaptive sequence detection further includes reduced state techniques in order to reduce complexity.

14. (original) The method according to claim 7 wherein said adaptive sequence detection further includes reduced state techniques in order to reduce complexity.

15. (original) The method according to claim 2 wherein said sequence detection further includes reduced state techniques in order to reduce complexity.

16. (original) The method according to claim 2 wherein said current estimate of model parameters is said initial estimate of model parameter for use in a system having negligible dynamic channel variation.

17. (original) The method according to claim 2 wherein said training portion and said data portion are contained within a common packet.

18. (original) The method according to claim ~~2~~ 17 wherein said common data packet comprises a single burst within a time division multiple access (TDMA) frame.

19. (original) The method according to claim 2 wherein said joint sequence detection is performed according to a trellis structure based on the number of co-channel interference signals present as estimated by said channel model.

20. (original) The method according to claim 2 wherein said channel model is constrained to a predetermined number of co-channel interference signals and further constrained, for the desired signal and each one of said co-channel interference signals, to a

predetermined time span of intersymbol interference channel response and a predetermined training sequence.

21. (original) The method according to claim 20 wherein said joint sequence detection is rendered adaptive by repeatedly updating said at least one estimate of said model parameters.

22. (original) The method according to claim 21 wherein said model parameters comprise coefficients of intersymbol interference channel response for the desired signal and each co-channel interference signal.

23. (original) The method according to claim 21 wherein said adaptive joint sequence detection is performed using per-survivor processing adaptive sequence detection.

24. (original) The method according to claim 21 wherein said adaptive joint sequence detection is performed using single delayed decision feedback estimation adaptive sequence detection.

25. (original) The method according to claim 24 wherein said adaptive sequence detection further includes reduced state techniques in order to reduce complexity.

26. (original) The method according to claim 23 wherein said adaptive sequence detection further includes reduced state techniques in order to reduce complexity.

27. (original) The method according to claim 22 wherein said adaptive sequence detection further includes reduced state techniques in order to reduce complexity.

28. (original) The method according to claim 21 wherein said sequence detection further includes reduced state techniques in order to reduce complexity.

29. (original) The method according to claim 20 wherein said sequence detection further includes reduced state techniques in order to reduce complexity.

30. (original) The method according to claim 20 wherein said current estimate of model parameters is said initial estimate of model parameter for use in a system having negligible dynamic channel variation.

31. (original) The method according to claim 20 wherein said training portion and said data portion are contained within a common packet.

32. (currently amended) The method according to claim ~~20~~ 31 wherein said common data packet comprises a single burst within a time division multiple access (TDMA) frame.

33. (original) The method according to claim 20 wherein said joint sequence detection is performed according to a trellis structure based on said predetermined number of co-channel interference signals.

34. (currently amended) A system for extracting information from a desired signal using a received signal in the presence of at least one co-channel interference signal and intersymbol interference while simultaneously demodulating both the desired signal and the ~~co-channel interference signals~~ at least one co-channel interference signal, said system comprising:

a receiver for capturing said received signal as channel observations;

a channel model and an initial value estimator for estimating a channel model and an initial estimate of corresponding model parameters for said channel model using said channel ~~observation~~ observations during a training portion, said channel model including an estimate of the number of co-channel interference signals present; and

a joint sequence detector for calculating a joint sequence on said channel ~~observation~~ observations during a data portion using said channel model and at least one current estimate of said model parameters thereby to produce an estimate of data representing said desired signal during said data portion.

35. (currently amended) The system of claim ~~32~~ 34 wherein said joint sequence detector is a trellis-based maximum-likelihood sequence detector.